

OM protein - protein search, using sw model

Run on: June 15, 2009, 01:03:29 ; Search time 73 Seconds
(without alignments)
1137.335 Million cell

updates/sec

Title: US-10-561-671-2
Perfect score: 531
Sequence: 1
TSNVTFTVNNATTVYGQNVY.....RTYTVPFSSSTGSYTANWNVP 99

Scoring table: BLOSUM62
Gapop 10.0 , Gapext 0.5

Searched: 4548778 seqs, 838641292 residues

Total number of hits satisfying chosen parameters: 8

Minimum DB seq length: 0
Maximum DB seq length: 2000000000

Post-processing: Minimum Match 95%
Maximum Match 100%
Listing first 45 summaries

Database : A_Geneseq_200812:*
1: geneseqp:*

Pred. No. is the number of results predicted by chance to
have a
score greater than or equal to the score of the result being
printed,
and is derived by analysis of the total score distribution.

SUMMARIES

		%			
Result		Query			
No.	Score	Match	Length	DB	ID
Description					

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1      531  100.0    99  1  ADW21532
Adw21532 Bacillus
2      531  100.0    99  1  ADW25806
Adw25806 Bacillus
3      531  100.0    99  1  AEA06468
Aea06468 Bacillus,
4      531  100.0    99  1  AEB72819
Aeb72819 Carbohydr
5      531  100.0    99  1  AEI54700
Aei54700 Glucoamyl
6      531  100.0    99  1  AOG56868
Aog56868 Bacillus
7      531  100.0   613  1  ADW21550
Adw21550 Bacillus
8      531  100.0   613  1  ADW71773
Adw71773 Anoxybaci

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ALIGNMENTS

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RESULT 1
ADW21532
ID   ADW21532 standard; protein; 99 AA.
XX
AC   ADW21532;
XX
DT   24-MAR-2005   (first entry)
XX
DE   Bacillus sp. carbohydrate-binding module (CBM).
XX
KW   Starch; sugar; high fructose starch-based syrup;
KW   high fructose corn syrup; fermentation; fuel; ethanol;
hydrolysis;
KW   sweetener; carbohydrate-binding module.
XX
OS   Bacillus sp.
XX
PN   WO2004113551-A1.
XX
PD   29-DEC-2004.
XX
PF   25-JUN-2004; 2004WO-DK000456.
XX
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PR 25-JUN-2003; 2003DK-00000949.
PR 24-OCT-2003; 2003DK-00001568.
XX
PA (NOVO) NOVOZYMES AS.
XX
PI Viksoe-Nielsen A, Andersen C, Pedersen S, Hjort C;
XX
DR WPI; 2005-075255/08.
XX
PT Producing soluble starch hydrolysate comprises subjecting
aqueous
PT granular starch slurry below initial gelatinization
temperature of
PT granular starch to action of Glycoside Hydrolase Family13
enzyme, and
PT fungal amylase.
XX
PS Claim 2; SEQ ID NO 2; 68pp; English.
XX
CC The invention relates to a method (M1) of producing a soluble
starch
CC hydrolysate. The method involves subjecting an aqueous
granular starch
CC slurry to the action of a first and second enzyme, where the
first enzyme
CC is member of the Glycoside Hydrolase Family13, having
alpha-1,4-
CC glucosidic hydrolysis activity and comprising a functional
carbohydrate-
CC binding module (CBM), and a second enzyme chosen from a
fungal alpha-
CC amylase (EC 3.2.1.1), a beta-amylase (EC 3.2.1.2) or
glucoamylase
CC (commonly known as glucan 1,4-alpha-glucosidase, EC 3.2.1.3).
The
CC invention discloses amino acid sequences for functional CBM
(SEQ ID Nos 1
CC -3), enzymes having alpha-amylase activity (SEQ ID Nos 4-18),
and enzymes
CC having alpha-amylase activity with a functional CBM (SEQ ID
Nos 19-22).
CC Also described are: (i) a process (M2) for the production of
high
CC fructose starch-based syrup (HFSS), where a soluble starch
hydrolysate
CC produced by method (M1) is subjected to conversion into HFSS,

such as
 CC high fructose corn syrup (HFCS), (ii) a process (M3) for
 production of a
 CC fermentation product, where a soluble starch hydrolysate
 produced by
 CC method (M1) is subjected to fermentation into a fermentation
 product,
 CC such as citric acid, monosodium glutamate, gluconic acid,
 sodium
 CC gluconate, calcium gluconate, potassium gluconate, glucono
 delta lactone,
 CC sodium erythorbate, itaconic acid, lactic acid, gluconic
 acid, ketones,
 CC amino acids, glutamic acid (sodium monoglutamate),
 penicillin,
 CC tetracycline, enzymes, vitamins, such as riboflavin, B12,
 beta-carotene
 CC or hormones, (iii) a process (M4) for production of fuel or
 potable
 CC ethanol, where a soluble starch hydrolysate produced by
 method (M1) is
 CC subjected to fermentation into ethanol, (iv) use of an enzyme
 having
 CC alpha-amylase activity in a process for hydrolysis of starch,
 and (v) use
 CC of an enzyme having alpha-amylase activity in a process for
 hydrolysis of
 CC granular starch. Method (M1) is useful for producing a
 soluble starch
 CC hydrolysate which is useful for production of high fructose
 starch-based
 CC syrup (HFSS), a fermentation product, fuel or potable
 ethanol. An enzyme
 CC having alpha-amylase is useful for the hydrolysis of granular
 starch. The
 CC hydrolysates are useful as sweeteners or as precursors for
 other
 CC saccharides, such as fructose. This sequence represents a
 carbohydrate-
 CC binding module (CBM).
 XX
 SQ Sequence 99 AA;

Query Match 100.0%; Score 531; DB 1; Length 99;
 Best Local Similarity 100.0%; Pred. No. 1.6e-50;
 Matches 99; Conservative 0; Mismatches 0; Indels

0; Gaps 0;

Qy 1
TSNVTFTVNNATTVYGQNVYVVGNIPELGNWNIANAIQMTTPSSYPTWKTTVSLPQGKAIE 60

|||||
Db 1
TSNVTFTVNNATTVYGQNVYVVGNIPELGNWNIANAIQMTTPSSYPTWKTTVSLPQGKAIE 60

Qy 61 FKFIKKDSAGNVIWENIANRTYTVPFSSSTGSYTANWNVP 99

|||||
Db 61 FKFIKKDSAGNVIWENIANRTYTVPFSSSTGSYTANWNVP 99

RESULT 2

ADW25806

ID ADW25806 standard; protein; 99 AA.

XX

AC ADW25806;

XX

DT 07-APR-2005 (first entry)

XX

DE Bacillus sp. Carbohydrate-Binding Module Family 20 CBM.

XX

KW Carbohydrate-Binding Module Family 20; carbohydrate-binding
module;

KW degradation; starch; fermentation; baking.

XX

OS Bacillus sp.

XX

PN WO2005003311-A2.

XX

PD 13-JAN-2005.

XX

PF 25-JUN-2004; 2004WO-US020499.

XX

PR 25-JUN-2003; 2003DK-00000949.

PR 25-JUN-2003; 2003US-0482589P.

PR 29-JUL-2003; 2003US-0490751P.

PR 14-OCT-2003; 2003US-0511044P.

PR 24-OCT-2003; 2003DK-00001568.

PR 27-OCT-2003; 2003US-0514854P.

PR 10-MAY-2004; 2004US-0569862P.

XX

PA (NOVO) NOVOZYMES AS.

PA (NOVO) NOVOZYMES NORTH AMERICA INC.

XX

PI Taira R, Tkagi S, Hjort C, Vikso-Nielsen A, Allain E,
Udagawa H;

XX

DR WPI; 2005-101485/11.

XX

PT New hybrid enzyme comprising a catalytic module with
alpha-amylase

PT activity and a carbohydrate-binding module, useful for
liquefying starch

PT for subsequent fermentation to produce e.g., ethanol, citric
acid,

PT vitamins, or antibiotics.

XX

PS Claim 1; SEQ ID NO 10; 102pp; English.

XX

CC The invention relates to a hybrid enzyme comprising a
catalytic module

CC from a fungal alpha-amylase and a carbohydrate-binding module
(CBM). Also

CC described is a variant of a fungal wild-type enzyme
comprising a CBM and

CC an alpha-amylase catalytic module. The hybrid enzyme or the
alpha-amylase

CC variant is useful for liquefying starch, where a gelatinized
or granular

CC starch substrate is treated in aqueous medium with one of the
above

CC enzymes. The method involves contacting the treated starch
with a yeast

CC to produce fuel or potable ethanol. The method involves
fermenting the

CC treated starch into a fermentation product, such as citric
acid,

CC monosodium glutamate, gluconic acid, sodium gluconate,
calcium gluconate,

CC potassium gluconate, glucono delta lactone, sodium
erythorbate, itaconic

CC acid, lactic acid, gluconic acid, ketones, amino acids,
glutamic acid

CC (sodium monoglutamate), penicillin, tetracycline, enzymes,
vitamins,

CC such as riboflavin, B12, beta-carotene or hormones. The
starch slurry is

CC contacted with a polypeptide comprising a
carbohydrate-binding module,

CC

CC but not catalytic module. The hybrid enzyme or variant enzyme is useful

CC for preparing a dough-based product, which involves adding the enzyme to

CC the dough. This sequence represents a CBM.

XX

SQ Sequence 99 AA;

Query Match 100.0%; Score 531; DB 1; Length 99;
Best Local Similarity 100.0%; Pred. No. 1.6e-50;
Matches 99; Conservative 0; Mismatches 0; Indels
0; Gaps 0;

Qy 1
TSNVTFTVNNATTVYGQNVYVVGNIPELGNWNIANAIQMTTPSSYPTWKTTVSLPQGKAIE 60

|||||
Db 1
TSNVTFTVNNATTVYGQNVYVVGNIPELGNWNIANAIQMTTPSSYPTWKTTVSLPQGKAIE 60

Qy 61 FKFIIKDSAGNVIWENIANRTYTVPFSSSTGSYTANWNVP 99
|||||
Db 61 FKFIIKDSAGNVIWENIANRTYTVPFSSSTGSYTANWNVP 99

RESULT 3

AEA06468

ID AEA06468 standard; protein; 99 AA.

XX

AC AEA06468;

XX

DT 28-JUL-2005 (first entry)

XX

DE Bacillus, carbohydrate binding module.

XX

KW glucoamylase; carbohydrate binding module; fermentation.

XX

OS Bacillus sp.

XX

PN WO2005045018-A1.

XX

PD 19-MAY-2005.

XX

PF 27-OCT-2004; 2004WO-US035991.

XX

PR 28-OCT-2003; 2003US-0515017P.

XX
PA (NOVO) NOVOZYMES NORTH AMERICA INC.
PA (NOVO) NOVOZYMES AS.
XX
PI Borchert T, Danielsen S, Allain E;
XX
DR WPI; 2005-347063/35.
XX
PT New hybrid enzyme comprising an amino acid sequence of a
catalytic module
PT having glucoamylase activity and a sequence of a
carbohydrate-binding
PT module, useful for producing a fermentation product such as
ethanol, or
PT syrup.
XX
PS Disclosure; SEQ ID NO 4; 105pp; English.
XX
CC The invention relates to a hybrid enzyme which comprises an
amino acid
CC sequence of a catalytic module having glucoamylase activity
and an amino
CC acid sequence of a carbohydrate-binding module. The hybrid
enzyme is
CC useful for producing a fermentation product such as ethanol,
or syrup.
CC The present sequence represents the amino acid sequence of a
Bacillus
CC glucoamylase, carbohydrate binding module.
XX
SQ Sequence 99 AA;

Query Match 100.0%; Score 531; DB 1; Length 99;
Best Local Similarity 100.0%; Pred. No. 1.6e-50;
Matches 99; Conservative 0; Mismatches 0; Indels
0; Gaps 0;

Qy 1
TSNVTFTVNNATTVYGQNVYVVGNIPELGNWNIANAIQMTTPSSYPTWKTTVSLPQGKAIE 60

|||||
Db 1
TSNVTFTVNNATTVYGQNVYVVGNIPELGNWNIANAIQMTTPSSYPTWKTTVSLPQGKAIE 60

Qy 61 FKFIIKDSAGNVIWENIANRTYTVPFSSSTGSYTANWNP 99

61
61

RESULT 4

AEB72819

ID AEB72819 standard; protein; 99 AA.

XX

AC AEB72819;

XX

DT 06-OCT-2005 (first entry)

XX

DE Carbohydrate-binding module #3.

XX

KW glucoamylase; fermentation; cereals; alcohol; ethanol; fuel ethanol;

KW potable ethanol; industrial ethanol; gelatinization.

XX

OS Bacillus sp.

XX

PN WO2005069840-A2.

XX

PD 04-AUG-2005.

XX

PF 14-JAN-2005; 2005WO-US001147.

XX

PR 16-JAN-2004; 2004US-0537071P.

PR 14-DEC-2004; 2004US-0636013P.

XX

PA (NOVO) NOVOZYMES NORTH AMERICA INC.

PA (NOVO) NOVOZYMES AS.

XX

PI Allain E, Wenger KS, Bisgard-Frantzen H;

XX

DR WPI; 2005-542205/55.

DR N-PSDB; AEB72816.

XX

PT Producing fermentation product e.g. ethanol from starch-containing

PT material involves saccharifying the material with specific glucoamylase,

PT at temperature below initial gelatinization temperature of the material

PT and fermenting.

XX

PS Disclosure; SEQ ID NO 15; 96pp; English.

XX

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CC This sequence represents a carbohydrate-binding module (CBM)
from
CC carbohydrate-binding module Family 20. This sequence may be
used in the
CC construction of a hybrid alpha-amylase protein which may be
used in the
CC method of the invention. The method for producing a
fermentation product
CC from milled starch-containing material involves:
saccharifying milled
CC starch-containing material with the glucoamylase from the
fungi *Athelia*
CC *rolfsii*, at temperature below the initial gelatinization
temperature of
CC starch containing material; and fermenting using a fermenting
medium. The
CC process is carried out for 1 - 250, especially 80 - 130
hours, at pH of 3
CC - 7, especially 4 - 5. The dry solid (DS) content in the
process is 20 -
CC 55 (preferably 25 - 40, especially 30 - 35) wt.%. The sugar
concentration
CC is kept below 3 wt.% during saccharification and
fermentation. A slurry
CC of water and milled starch-containing material is prepared
before step
CC (a). The milled-starch-containing material is prepared by
milling starch-
CC containing material to a particle size of 0.1 - 0.5 mm. The
CC saccharification is carried out simultaneously. The
fermentation is
CC carried out at 28 - 36, especially 32 deg C. The glucoamylase
is present
CC in an amount of 0.01 - 10, especially 0.1 - 0.5 AGU/g DS. The

CC fermentation product is recovered after fermentation. The
process is
CC carried out in the presence of a protease (preferably acid
protease,
CC especially fungal acid protease). The starch-containing
material is
CC obtained from tubers, roots, stems, seeds or whole grains of
corn, cobs,
CC wheat, barley, rye, milo, sago, cassava, manioc, tapioca,
sorghum, rice
CC or potatoes (preferably cereals). The method of the invention

is for
CC producing a fermentation product e.g. alcohol such as ethanol
selected
CC from fuel ethanol, potable ethanol and industrial ethanol.
The method
CC produces fermentation product without gelatinization of the
starch-
CC containing material; and produces ethanol in higher yield
XX
SQ Sequence 99 AA;

Query Match 100.0%; Score 531; DB 1; Length 99;
Best Local Similarity 100.0%; Pred. No. 1.6e-50;
Matches 99; Conservative 0; Mismatches 0; Indels
0; Gaps 0;

Qy 1
TSNVTF TVNNATT VYGQNVYVVGNIPELGNWN IANAIQMTPSSYPTWKTTVSLPQGKAIE 60

|||||
Db 1
TSNVTF TVNNATT VYGQNVYVVGNIPELGNWN IANAIQMTPSSYPTWKTTVSLPQGKAIE 60

Qy 61 FKFIIKDSAGNVIWENIANRTYTVPFSSSTG SYTANWNV 99
|||||
Db 61 FKFIIKDSAGNVIWENIANRTYTVPFSSSTG SYTANWNV 99

RESULT 5
AEI54700

ID AEI54700 standard; protein; 99 AA.

XX

AC AEI54700;

XX

DT 24-AUG-2006 (first entry)

XX

DE Glucoamylase carbohydrate-binding domain SEQ ID NO:6.

XX

KW textile; glucoamylase.

XX

OS Bacillus sp.

XX

PN W02006065579-A2.

XX

PD 22-JUN-2006.

XX

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PF 01-DEC-2005; 2005WO-US044044.
XX
PR 02-DEC-2004; 2004US-0632611P.
XX
PA (NOVO) NOVOZYMES NORTH AMERICA INC.
XX
PI Wu G, Liu J, Salmon S;
XX
DR WPI; 2006-454552/46.
XX
PT Desizing of sized fabric that contains starch or starch
derivatives, in
PT the manufacture of fabric, involves incubation of the sized
fabric in
PT aqueous acidic treating solution containing alpha-amylase.
XX
PS Disclosure; SEQ ID NO 6; 114pp; English.
XX
CC The invention relates to desizing of a sized fabric that
contains starch
CC or starch derivatives during manufacture, by incubating the
sized fabric
CC in an aqueous treating solution with a pH of 1-5 (preferably
2-4) and
CC comprising an alpha-amylase. The alpha-amylase (preferably
acid alpha-
CC amylase) is of bacterial or fungal, such as filamentous
fungus, origin.
CC The alpha-amylase is derived from Aspergillus, Rhizomucor,
or
CC Meripilus. The bacterial alpha-amylase is derived from a
strain of
CC Bacillus and is preferably AA560 alpha-amylase. The
alpha-amylase is a
CC hybrid enzyme having a carbohydrate-binding domain (CBD)
(preferably
CC starch-binding domain of fungal or bacterial origin derived
from strains
CC of Aspergillus, Athelia, or Talaromyces). The alpha-amylase
having a CBD
CC comprises a linker between the alpha-amylase and CBD or
starch-binding
CC domain, where the linker is derived from strain of Athelia or

CC Aspergillus. Alternatively, the alpha-amylase is a hybrid
alpha-amylase
XX

CC comprising a catalytic domain (CD) from *Rhizomucor pusillus*
alpha-amylase
CC that has a carbohydrate-binding domain (CBD) from the
glucoamylase of
CC *Athelia rolfsii*. The method is useful for desizing of sized
fabrics (e.g.
CC fabric made from fibres of natural, man-made or animal origin
such as
CC cotton fabric, denim, linen, ramie, viscose, lyocell,
cellulose acetate,
CC silk, or wool; or polyester fibers of man-made or natural
origin such as
CC poly(ethylene terephthalate) or poly(lactic acid); or fibers
of nylon,
CC acrylic, or polyurethane; polyester containing fabric or
garment that
CC consists of 100% polyester; or the polyester fabric
consisting of
CC polyester blend, such as polyester and cellulosic blend,
including
CC polyester and cotton blends; polyester and wool blend;
polyester and silk
CC blend; polyester and acrylic blend; polyester and nylon
blend; polyester,
CC nylon and polyurethane blend; polyester and polyurethane
blend, rayon
CC (viscose), cellulose acetate and tencel) during manufacture
of fabric.
CC The process facilitates desizing of the fabric during
manufacture of new
CC fabrics with traditional sizing/desizing equipments, hence no
additional
CC process equipment is required. In the process,
demineralization takes
CC place simultaneously and/or after desizing of the sized
fabric in the
CC same treating solution as compared to the prior art, thus the
process
CC saves time, and reduces cost of e.g. acids and manpower for
acid addition
CC as the pH adjustment step is eliminated. This sequence is a
glucoamylase
CC carbohydrate-binding domain.
XX
SQ Sequence 99 AA;

Query Match 100.0%; Score 531; DB 1; Length 99;
Best Local Similarity 100.0%; Pred. No. 1.6e-50;
Matches 99; Conservative 0; Mismatches 0; Indels
0; Gaps 0;

Qy 1
TSNVFTFTVNNATTVYGQNVYVVGNIPELGNWNIANAIQMTTPSSYPTWKTTVSLPQGKAIE 60

|||||
Db 1
TSNVFTFTVNNATTVYGQNVYVVGNIPELGNWNIANAIQMTTPSSYPTWKTTVSLPQGKAIE 60

Qy 61 FKFIIKDSAGNVIWENIANRTYTVPFSSSTGSYTANWNVP 99
|||||
Db 61 FKFIIKDSAGNVIWENIANRTYTVPFSSSTGSYTANWNVP 99

RESULT 6

AOG56868

ID AOG56868 standard; protein; 99 AA.

XX

AC AOG56868;

XX

DT 01-MAY-2008 (first entry)

XX

DE Bacillus sp. alpha-amylase CBD domain protein.

XX

KW Alpha-amylase; endo-alpha-amylase; 1,

4-alpha-D-glucan-glucano-hydrolase;

KW enzyme; EC 3.2.1.1.

XX

OS Bacillus sp.

XX

PN WO2007149699-A2.

XX

PD 27-DEC-2007.

XX

PF 06-JUN-2007; 2007WO-US070485.

XX

PR 21-JUN-2006; 2006US-0815788P.

XX

PA (NOVO) NOVOZYMES NORTH AMERICA INC.

PA (NOVO) NOVOZYMES AS.

XX

PI Liu J, Salmon S, Wu G;

XX

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DR WPI; 2008-D53563/25.

XX

PT Combined desizing and scouring of a sized fabric containing starch or

PT starch derivatives during manufacture of a fabric by incubating the sized

PT fabric in an aqueous treating solution comprising an acid amylase and

PT acid scouring enzyme.

XX

PS Disclosure; SEQ ID NO 6; 43pp; English.

XX

CC The present invention provides a process for combined desizing and

CC scouring of a sized fabric containing starch or starch derivatives during

CC manufacture of a fabric. The process involves incubating said sized

CC fabric in an aqueous treating solution having a pH in the range between 1

CC and 7, which aqueous treating solution comprises an alpha-amylase such as

CC acid alpha-amylase (endo-alpha-amylase, 1, 4-alpha-D-glucan-glucano-

CC hydrolase) or hybrid alpha-amylase containing a carbohydrate-binding

CC domain (CBD) and at least one other acid enzyme (such as cellulase,

CC pectinase, lipase, xylanase and protease) facilitating said other fabric

CC treatment steps. Acid amylases of the invention are of bacterial or

CC fungal origin such as filamentous fungus origin. The present sequence is

CC a Bacillus sp. alpha-amylase (EC 3.2.1.1) CBD domain protein.

XX

SQ Sequence 99 AA;

Query Match 100.0%; Score 531; DB 1; Length 99;
Best Local Similarity 100.0%; Pred. No. 1.6e-50;
Matches 99; Conservative 0; Mismatches 0; Indels
0; Gaps 0;

Qy

1

TSNVTF TVNNATT VYGQNVYVVGNIPELG NWNIANAIQMTPSSYPTWKTTVSLPQGKAIE 60

.....

|||||
Db 1
TSNVTFTVNNATTVYGQNVYVVGNIPELGNWNIANAIQMTPSSYPTWKTTVSLPQGKAIE 60

Qy 61 FKFIKKDSAGNVIWENIANRTYTVPFSSSTGSYTANWNVP 99
|||||
Db 61 FKFIKKDSAGNVIWENIANRTYTVPFSSSTGSYTANWNVP 99

RESULT 7

ADW21550

ID ADW21550 standard; protein; 613 AA.

XX

AC ADW21550;

XX

DT 24-MAR-2005 (first entry)

XX

DE Bacillus alpha-amylase for granular starch hydrolysis.

XX

KW Starch; sugar; high fructose starch-based syrup;

KW high fructose corn syrup; fermentation; fuel; ethanol;
hydrolysis;

KW sweetener; alpha-amylase; enzyme; EC 3.2.1.1;

KW carbohydrate-binding module.

XX

OS Bacillus.

OS Synthetic.

XX

PN WO2004113551-A1.

XX

PD 29-DEC-2004.

XX

PF 25-JUN-2004; 2004WO-DK000456.

XX

PR 25-JUN-2003; 2003DK-00000949.

PR 24-OCT-2003; 2003DK-00001568.

XX

PA (NOVO) NOVOZYMES AS.

XX

PI Viksoe-Nielsen A, Andersen C, Pedersen S, Hjort C;

XX

DR WPI; 2005-075255/08.

XX

PT Producing soluble starch hydrolysate comprises subjecting
aqueous

PT granular starch slurry below initial gelatinization

temperature of

PT granular starch to action of Glycoside Hydrolase Family13 enzyme, and

PT fungal amylase.

XX

PS Claim 4; SEQ ID NO 20; 68pp; English.

XX

CC The invention relates to a method (M1) of producing a soluble starch

CC hydrolysate. The method involves subjecting an aqueous granular starch

CC slurry to the action of a first and second enzyme, where the first enzyme

CC is member of the Glycoside Hydrolase Family13, having alpha-1,4-

CC glucosidic hydrolysis activity and comprising a functional carbohydrate-

CC binding module (CBM), and a second enzyme chosen from a fungal alpha-

CC amylase (EC 3.2.1.1), a beta-amylase (EC 3.2.1.2) or glucoamylase

CC (commonly known as glucan 1,4-alpha-glucosidase, EC 3.2.1.3). The

CC invention discloses amino acid sequences for functional CBM (SEQ ID Nos 1

CC -3), enzymes having alpha-amylase activity (SEQ ID Nos 4-18), and enzymes

CC having alpha-amylase activity with a functional CBM (SEQ ID Nos 19-22).

CC Also described are: (i) a process (M2) for the production of high

CC fructose starch-based syrup (HFSS), where a soluble starch hydrolysate

CC produced by method (M1) is subjected to conversion into HFSS, such as

CC high fructose corn syrup (HFCS), (ii) a process (M3) for production of a

CC fermentation product, where a soluble starch hydrolysate produced by

CC method (M1) is subjected to fermentation into a fermentation product,

CC such as citric acid, monosodium glutamate, gluconic acid, sodium

CC gluconate, calcium gluconate, potassium gluconate, glucono delta lactone,

CC sodium erythorbate, itaconic acid, lactic acid, gluconic

acid, ketones,
 CC amino acids, glutamic acid (sodium monoglutamate),
 penicillin,
 CC tetracycline, enzymes, vitamins, such as riboflavin, B12,
 beta-carotene
 CC or hormones, (iii) a process (M4) for production of fuel or
 potable
 CC ethanol, where a soluble starch hydrolysate produced by
 method (M1) is
 CC subjected to fermentation into ethanol, (iv) use of an enzyme
 having
 CC alpha-amylase activity in a process for hydrolysis of starch,
 and (v) use
 CC of an enzyme having alpha-amylase activity in a process for
 hydrolysis of
 CC granular starch. Method (M1) is useful for producing a
 soluble starch
 CC hydrolysate which is useful for production of high fructose
 starch-based
 CC syrup (HFSS), a fermentation product, fuel or potable
 ethanol. An enzyme
 CC having alpha-amylase is useful for the hydrolysis of granular
 starch. The
 CC hydrolysates are useful as sweeteners or as precursors for
 other
 CC saccharides, such as fructose. This sequence represents an
 alpha-amylase
 CC with a functional CBM.
 XX
 SQ Sequence 613 AA;

Query Match 100.0%; Score 531; DB 1; Length 613;
 Best Local Similarity 100.0%; Pred. No. 1.7e-49;
 Matches 99; Conservative 0; Mismatches 0; Indels
 0; Gaps 0;

Qy 1
 TSNVTFTVNNATTVYGQNVYVVGNIPELGNWNIANAIQMTPSSYPTWKTTVSLPQGKAIE 60

|||||
 Db 515
 TSNVTFTVNNATTVYGQNVYVVGNIPELGNWNIANAIQMTPSSYPTWKTTVSLPQGKAIE 574

Qy 61 FKFIIKDSAGNVIWENIANRTYTVPFSSSTGSYTANWNV 99
 |||||
 Db 575 FKFIIKDSAGNVIWENIANRTYTVPFSSSTGSYTANWNV 613

RESULT 8

ADW71773

ID ADW71773 standard; protein; 613 AA.

XX

AC ADW71773;

XX

DT 24-MAR-2005 (first entry)

XX

DE Anoxybacillus flavithermus alpha-amylase #3.

XX

KW alpha-amylase; carbohydrate-binding affinity; surfactant; textile;

KW sweetener; baking; ethanol; fuel; brewing; pulp; paper; bread; enzyme.

XX

OS Anoxybacillus flavithermus.

XX

FH Key Location/Qualifiers

FT Region 1. .583

FT /note= "region specifically claimed in claim 1"

FT Region 1. .455

FT /note= "region specifically claimed in claim 10"

FT Peptide 1. .30

FT /label= signal_peptide

FT Protein 31. .613

FT Domain 31. .484

FT /note = catalytic domain

FT Region 455. .583

FT /note= "region specifically claimed in claim 16"

FT Domain 485. .613

FT /note = carbohydrate binding domain

FT Region 485. .583

FT /note= "region specifically claimed in claim 25"

XX

PN WO2005001064-A2.

XX

PD 06-JAN-2005.

XX

PF 25-JUN-2004; 2004WO-US023031.

XX

-- 05 JUN 2005 0000PM 00000000

PR 25-JUN-2003; 2003DK-00000949.
PR 25-JUN-2003; 2003US-0482589P.
PR 24-OCT-2003; 2003DK-00001568.
PR 27-OCT-2003; 2003US-0514854P.
PR 12-NOV-2003; 2003US-0519554P.
XX
PA (NOVO) NOVOZYMES AS.
PA (NOVO) NOVOZYMES NORTH AMERICA INC.
XX
PI Hoff T, Andersen C, Spendler T, Pedersen S, Vikso-Nielsen
A;
PI Schafer T, Liu J;
XX
DR WPI; 2005-075552/08.
DR N-PSDB; ADW71772.
XX
PT Novel polypeptide having alpha-amylase activity and/or
carbohydrate-
PT binding affinity, useful in preparing detergent composition
and dough,
PT and in textile desizing.
XX
PS Claim 1; SEQ ID NO 6; 79pp; English.
XX
CC This invention describes a novel polypeptide isolated from
Anoxybacillus
CC flavithermus (Bacillus flavithermus) which has alpha-amylase
activity
CC and/or carbohydrate-binding affinity. The novel polypeptide
is useful 1)
CC in cleaning or detergent composition, preferably laundry or
dish wash
CC compositions optionally with a surfactant), 2) for desizing
and treating
CC textiles, fabrics, yarn or garments, 3) for preparing a
dough-based
CC product with improved elasticity, firmness, softness and
moistness, 4)
CC for liquefaction of starch, 5) in ethanol and fuel production
from starch
CC or whole grains 6) in beer making or brewing 7) pulp and
paper production
CC or 8) sweetener production. This sequence represents a novel
CC Anoxybacillus flavithermus alpha-amylase.
XX
SQ Sequence 613 AA;

Query Match 100.0%; Score 531; DB 1; Length 613;
Best Local Similarity 100.0%; Pred. No. 1.7e-49;
Matches 99; Conservative 0; Mismatches 0; Indels
0; Gaps 0;

Qy 1
TSNVTFTVNNATTVYGQNVYVVGNIPELGNWNIANAIQMTTPSSYPTWKTTVSLPQGKAIE 60

|||||
Db 515
TSNVTFTVNNATTVYGQNVYVVGNIPELGNWNIANAIQMTTPSSYPTWKTTVSLPQGKAIE 574

Qy 61 FKFIKKDSAGNVIWENIANRTYTVPFSSSTGSYTANWNV 99
|||||
Db 575 FKFIKKDSAGNVIWENIANRTYTVPFSSSTGSYTANWNV 613

Search completed: June 15, 2009, 01:04:43
Job time : 74 secs